

ture seed. This course may have been taken to secure earliness. Practical deductions, however, may be left for the cultivator; present interest centers more especially in the fact, illustrated by the experiments, that the hereditary law of the transmission of vigor holds as strongly in the vegetable as in the animal kingdom.—EMMETT S. GOFF.

**Petroleum Spirit as a Plant Preservative.**—If petroleum spirit (boiling from 25°–45°C.) has not been employed for preserving plants intended for the study of chemical constituents, I should like to propose it.

Plants for macro-chemical work are usually preserved by drying. Dried plants have lost volatile substances, particularly volatile oils. Chemical changes, too, have been produced by plants remaining in contact with air. Since the first step in the chemical analysis of the plant is to treat it with petroleum spirit, and as cold maceration requires a good deal of time for complete extraction, time is actually saved by thus keeping the plant.

I am not proposing petroleum spirit as a preservative entirely on my own experience. An experienced chemist to whom I spoke thought it would be excellent. After beginning the analysis of different plants, he had several times been interrupted and obliged to keep them in petroleum spirit for a year at least. If kept in the dark he invariably found them in good condition.

Dried plants are not fit for microscopic study, even if their chemical constituents are unaltered. Their cells are contracted and they break so readily that sections are not conveniently made. Therefore plants must be kept in a liquid. Ordinary alcohol removes too many constituents and renders the plants too brittle. In a measure the same is true of absolute alcohol. Moreover absolute alcohol absorbs water so rapidly that it is troublesome, and it is too expensive. Since Dr. H. W. Jayne, of Frankfort, Philadelphia, has undertaken the manufacture of petroleum spirit it is easily obtained and does not cost a great deal. Ordinarily it removes only a little chlorophyll and volatile and fixed oils. If these constituents are to be especially studied, the previous macro chemical examination would show in what they were insoluble and the plants preserved in these. My experience has been that petroleum spirit does not contract the plant or render it brittle, as does alcohol. Since petroleum spirit does not remove water, I should think this would be true in most cases.

The rapidity of evaporation of petroleum spirit is objectionable because of waste and the danger of fire. But rapidity of evaporation is not always disadvantageous. One can thus easily free the object from petroleum spirit if it is desired to mount in something else.—LILLIE J. MARTIN.

[Histologists will notice that Miss Martin does not claim that petroleum spirit is a suitable preservative for tissues for histological examination. Cell-walls are admirably preserved by it, but the structure of the cell contents is not well shown. The liquid is so volatile as to make the handling of sections almost impossible. Nor does the petroleum spirit harden specimens suitably for section cutting. We call attention to these points lest some one may be disappointed by hoping to preserve histological material by this liquid.—EDS.]